

What Is Claimed Is:

1. A method for forming an air gap during a semiconductor metal line manufacturing process, comprising:
 - stacking a lower insulating layer, a lower metal line and an upper insulating layer;
 - patterning a first photosensitive film on the upper insulating layer;
 - using the patterned first photosensitive film as a mask, etching the upper insulating layer until at least a portion of the upper metal line is exposed;
 - filling an etched portion of the upper insulating layer with a nitride film;
 - patterning a second photosensitive film;
 - using the second photosensitive film as a mask, etching the lower metal line until the lower insulating layer is exposed;
 - depositing an IMD (Inter Metal Dielectric) layer;
 - forming an air gap within the IMD layer;
 - etching away the nitride film, thereby forming a hole in the IMD layer;
 - filling the hole with a conductive material;
 - depositing an upper metal line over the conductive material.
2. A method as defined in claim 1, wherein depositing the upper metal line is performed by an Al/Cu damascene process.

3. A method as defined in claim 1 further comprising removing the first photosensitive film.
4. A method as defined in claim 3 further comprising removing the upper insulating layer.
5. A method as defined in claim 4 further comprising removing the second photosensitive film.
6. A method as defined in claim 5 further comprising planarizing the IMD layer.